

Sample/Pre-Board Paper 27
Class X Term 1 Exam Nov -Dec 2021
Mathematics (Standard) 041

Time Allowed: 90 minutes Maximum Marks: 40

General Instructions:

1. The question paper contains three parts A, B and C.
2. Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
3. Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
4. Section C consists of 10 questions based on two Case Studies. Attempt any 8 questions.
5. There is no negative marking.

SECTION A

Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

1. The decimal expansion of $\frac{23}{2^3 \times 5^2}$ will terminate after how many places of decimal?

- (a) 2 (b) 4
(c) 5 (d) 1

2. The sum and product of zeroes of a quadratic polynomial are 6 and 9 respectively. The quadratic polynomial will be

- (a) $x^2 + 9x - 6$ (b) $x^2 + 6x + 9$
(c) $x^2 - 6x + 9$ (d) $x^2 + 6x - 9$

3. If ratio of corresponding sides of two similar triangles is 5 : 6, then what is the ratio of their areas?

- (a) 6 : 5 (b) 5 : 6
(c) 25 : 36 (d) 36 : 25

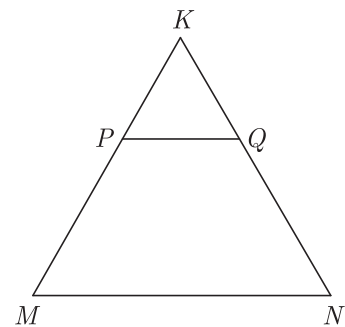
4. The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of second triangle is

- (a) 4.2 cm (b) 5.4 cm
(c) 20 cm (d) 6 cm

5. When a die is thrown, the probability of getting an odd number less than 3 is

- (a) $\frac{1}{6}$ (b) $\frac{1}{3}$
(c) $\frac{1}{2}$ (d) 0

6. In the figure, PQ is parallel to MN . If $\frac{KP}{PM} = \frac{4}{13}$ and $KN = 20.4$ cm then KQ will be



- (a) 4.1 cm (b) 5.2 cm
(c) 4.8 cm (d) 5.4 cm

7. If $4 \tan \theta = 3$, then $\left(\frac{4 \sin \theta - \cos \theta}{4 \sin \theta + \cos \theta}\right)$ is equal to

- (a) $\frac{2}{3}$ (b) $\frac{1}{3}$
(c) $\frac{1}{2}$ (d) $\frac{3}{4}$

8. $2\sqrt{3}$ is

- (a) an integer
(b) a rational number
(c) an irrational number
(d) a whole number

9. The pair of linear equations $2kx + 5y = 7$, $6x - 5y = 11$ has a unique solution, if

- (a) $k \neq -3$ (b) $k \neq \frac{2}{3}$
(c) $k \neq 5$ (d) $k \neq \frac{2}{9}$

10. The distance of the point $P(-3, -4)$ from the x -axis (in units) is

- (a) 3 (b) -3
(c) 4 (d) 5

11. The least number which is a perfect square and is divisible by each of 16, 20 and 24 is

- (a) 240 (b) 1600
(c) 2400 (d) 3600

12. Select the smallest number which is divisible by both 306 and 657.

- (a) 16498 (b) 22398
(c) 22338 (d) 16414

13. If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$, $A > B$, then the value of A is

- (a) 45° (b) 60°
(c) 90° (d) 30°

14. If A and B are acute angles and $\sin A = \cos B$, then the value of $A + B$ is

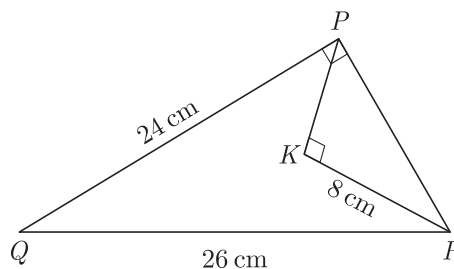
- (a) 60° (b) 180°
(c) 90° (d) 120°

15. What is the area of the circle that can be inscribed in a square of side 8 cm?

- (a) $32\pi \text{ cm}^2$ (b) $16\pi \text{ cm}^2$
(c) $21\pi \text{ cm}^2$ (d) $42\pi \text{ cm}^2$

16. In the given triangle PQR , $\angle QPR = 90^\circ$, $PQ = 24$ cm and $QR = 26$ cm and in ΔPKR , $\angle PKR = 90^\circ$ and

$KR = 8$ cm, the length of PK will be



- (a) 3 cm (b) 4 cm
(c) 5 cm (d) 6 cm

17. A man steadily goes 10 m due east and then 24 m due north. What is the distance from the starting point.

- (a) 25 m (b) 26 m
(c) 15 m (d) 18 m

18. The trigonometric ratio of $\tan A$ is equal to

- (a) $\frac{\sin A}{\sqrt{1 - \cos^2 A}}$ (b) $\frac{\sin A}{\sqrt{1 - \sin^2 A}}$
(c) $\frac{\cos A}{\sqrt{1 - \sec^2 A}}$ (d) $\frac{1}{\sqrt{1 - \cot^2 A}}$

19. Aruna has only ₹ 1 and ₹ 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is ₹ 75, then the number of ₹ 1 and ₹ 2 coins are, respectively

- (a) 35 and 15 (b) 35 and 20
(c) 15 and 35 (d) 25 and 25

20. If a letter is chosen at random from the letter of English alphabet, then the probability that it is a letter of the word DELHI is

- (a) $\frac{1}{5}$ (b) $\frac{1}{26}$
(c) $\frac{5}{26}$ (d) $\frac{21}{26}$

SECTION B

Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

21. If $\text{HCF}(336, 54) = 6$, $\text{LCM}(336, 54)$ will be

- (a) 2024 (b) 3024
(c) 1012 (d) 1512

22. C is the mid-point of PQ , if P is $(4, x)$, C is $(y, -1)$ and Q is $(-2, 4)$, then x and y respectively are

- (a) -6 and 1 (b) -6 and 2
(c) 6 and -1 (d) 6 and -2

23. If $1 + \sin^2 \theta = 3 \sin \theta \cos \theta$, then $\tan \theta$ will be

- (a) only 1 (b) only $\frac{1}{2}$
(c) both 1 and $\frac{1}{2}$ (d) only 2

24. What do you say about the following pair of linear equation ?

$$3x + 2y = 8, \quad 6x - 4y = 9$$

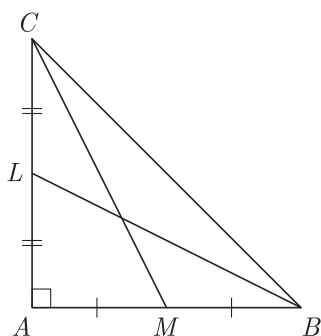
- (a) Lines are parallel
(b) pair of linear equation is consistent
(c) pair of linear equation is inconsistent
(d) Lines are coincident

25. If one of the zeroes of the quadratic polynomial $(k - 1)x^2 + kx + 1$ is -3 , then the value of k is

- (a) $\frac{4}{3}$ (b) $-\frac{4}{3}$
(c) $\frac{2}{3}$ (d) $-\frac{2}{3}$

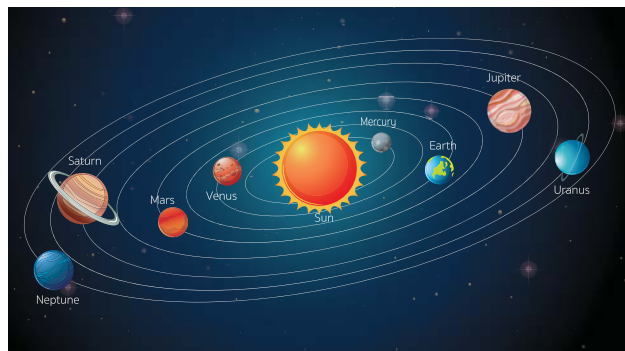
26. On a single roll of a die, the probability of getting a number 8 is
- (a) 0.5 (b) 0.4
(c) 1 (d) 0
27. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball at random from the bag is three times that of a red ball, what is the number of blue balls in the bag.
- (a) 13 (b) 14
(c) 15 (d) 16
28. If $x \sin^3 \theta + y \cos^3 \theta = \sin \theta \cos \theta$ and $x \sin \theta = y \cos \theta$, then $x^2 + y^2$ is equal to
- (a) 1 (b) 2
(c) 3 (d) 4
29. The point which lies on the perpendicular bisector of the line segment joining the points $A(-2, -5)$ and $B(2, 5)$ is
- (a) (0, 0) (b) (0, 2)
(c) (2, 0) (d) (-2, 0)

30. In the given figure, BL and CM are medians of ΔABC , right angled at A . The term $4(BL^2 + CM^2)$ is equal to

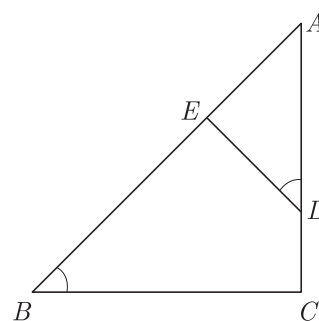


- (a) $5BC^2$ (b) $4BC^2$
(c) $3BC^2$ (d) $2BC^2$
31. If the vertices of ΔABC are $A(5, -1), B(-3, -2), C(-1, 8)$, the length of median through A will be
- (a) $\sqrt{65}$ (b) $\sqrt{55}$
(c) $\sqrt{45}$ (d) $\sqrt{35}$
32. $\sin^2 30^\circ \cos^2 45^\circ + 4 \tan^2 30^\circ + \frac{1}{2} \sin 90^\circ - 2 \cos^2 90^\circ + \frac{1}{24} = ?$
- (a) 0
(b) 1
(c) 2
(d) 3

33. Mercury, Venus, and Earth revolve around the Sun approximately once every 3 months, 7 months, and 12 months, respectively. If the planets begin lined up, what is the minimum number of months required for them to be aligned again? (Assume that the planets lie roughly in the same plane.)

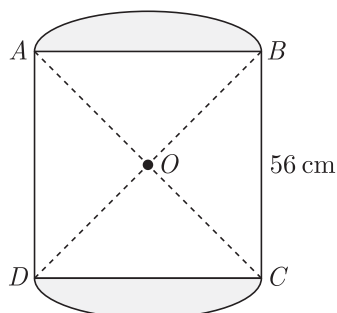


- (a) 4 years (b) 6 year
(c) 7 years (d) 8 year
34. In ΔABC , if $\angle ADE = \angle B$, then prove that $\Delta ADE \sim \Delta ABC$. Also, if $AD = 7.6$ cm, $AE = 7.2$ cm, $BE = 4.2$ cm and $BC = 8.4$ cm, then length DE will be



- (a) 5.6 cm (b) 2.8 cm
(c) 4.8 cm (d) 3.8 cm
35. What is the ratio in which the point $P(\frac{3}{4}, \frac{5}{12})$ divides the line segment joining the point $A(\frac{1}{2}, \frac{3}{2})$ and $(2, -5)$.
- (a) 4 : 7
(b) 3 : 7
(c) 1 : 5
(d) 2 : 5
36. What is the area of the square that can be inscribed in a circle of radius 8 cm?
- (a) 392 cm^2
(b) 128 cm^2
(c) 256 cm^2
(d) 196 cm^2

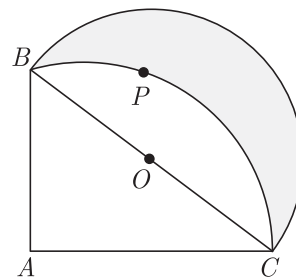
37. In given figure two circular flower beds have been shown on two sides of a square lawn $ABCD$ of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, what is the sum of the areas of the lawn and flower beds?



- (a) 1016 m^2 (b) 3014 m^2
 (c) 4032 m^2 (d) 2016 m^2
38. The zeroes of the polynomial $p(x) = 4x^2 - 12x + 9$ will be
- (a) $\frac{3}{2}$ and $\frac{3}{2}$ (b) $\frac{2}{3}$ and $\frac{1}{3}$

- (c) $\frac{2}{3}$ and $\frac{1}{3}$ (d) $\frac{1}{3}$ and $\frac{1}{3}$

39. In given figure $ABPC$ is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. What is the area of the shaded region?



- (a) 56 cm^2 (b) 112 cm^2
 (c) 42 cm^2 (d) 84 cm^2
40. Select the value of k for which the pair of Linear equations $kx + y = d^2$ and $x + ky = 1$ have infinitely many solutions.
- (a) 1 (b) 2
 (c) 3 (d) 4

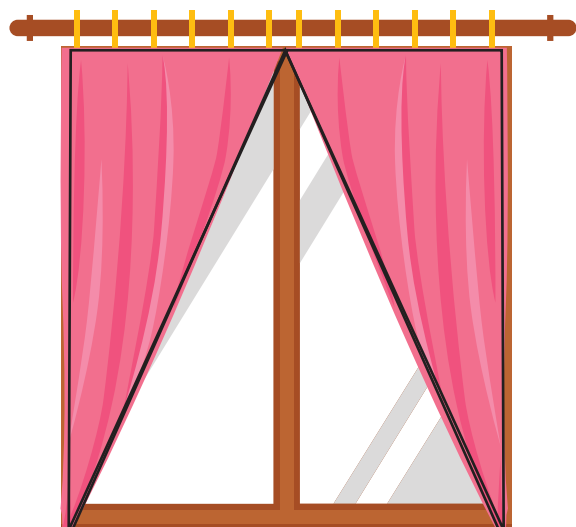
SECTION C

Case study based questions:

Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.

Case Based Questions: (41-45)

Rani wants to make the curtains for her window as shown in the figure. The window is in the shape of a rectangle, whose width and height are in the ratio 2:3. The area of the window is 9600 square cm.



41. What is the shape of the window that is uncovered?
- (a) Right triangle (b) Equilateral triangle
 (c) Isosceles triangle (d) Rectangle
42. What will be the ratio of two sides of each curtain (other than hypotenuse) ?
- (a) 1 : 3 (b) 2 : 3
 (c) 1 : 1 (d) 3 : 2
43. What are the dimensions of the window ?
- (a) 40 cm \times 80 cm (b) 20 cm \times 60 cm
 (c) 80 cm \times 120 cm (d) 40 cm \times 120 cm
44. What will be the perimeter of the window ?
- (a) 200 cm (b) 100 cm
 (c) 400 cm (d) 450 cm
45. How much window area is covered by the curtains?
- (a) 50% (b) 75%
 (c) 25% (d) 80%

Case Based Questions: (46-50)

Amar, Akbar and Anthony are playing a game. Amar climbs 5 stairs and gets down 2 stairs in one turn. Akbar goes up by 7 stairs and comes down by 2 stairs every time. Anthony goes 10 stairs up and 3 stairs down each time.



Doing this they have to reach to the nearest point of 100th stairs and they will stop once they find it impossible to go forward. They can not cross 100th stair in anyway.

46. Who reaches the nearest point?
- (a) Amar
 - (b) Akbar
 - (c) Anthony
 - (d) All together reach to the nearest point.
47. How many times can they meet in between on same stair ?
- (a) 3
 - (b) 4
 - (c) 5
 - (d) No, they cannot meet in between on same stair.
48. Who takes least number of steps to reach near hundred?
- (a) Amar
 - (b) Akbar
 - (c) Anthony
 - (d) All of them take equal number of steps.
49. What is the first stair where any two out of three will meet together?
- (a) Amar and Akbar will meet for the first time on 15th stair.
 - (b) Akbar and Anthony will meet for the first time on 35th stair.
 - (c) Amar and Anthony will meet for the first time on 21th stair.
 - (d) Amar and Akbar will meet for the first time on 21th stair.
50. What is the second stair where any two out of three will meet together?
- (a) Amar and Akbar will meet on 21th stair.
 - (b) Akbar and Anthony will meet on 35th stair.
 - (c) Amar and Anthony will meet on 21th stair.
 - (d) Amar and Anthony will meet on 35th stair.

SAMPLE PAPER - 22 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(c)	Ch-1	9
2	(c)	Ch-2	S-2
3	(c)	Ch-4	10
4	(b)	Ch-4	23
5	(a)	Ch-8	11
6	(c)	Ch-4	33
7	(c)	Ch-6	11
8	(c)	Ch-1	12
9	(a)	Ch-3	10
10	(c)	Ch-5	9
11	(d)	Ch-1	23
12	(c)	Ch-1	S-26
13	(a)	Ch-6	27
14	(c)	Ch-6	40
15	(b)	Ch-7	43
16	(d)	Ch-4	43
17	(b)	Ch-4	54
18	(b)	Ch-6	57
19	(d)	Ch-3	20
20	(c)	Ch-8	21
21	(b)	Ch-1	38
22	(a)	Ch-5	20
23	(c)	Ch-6	70
24	(b)	Ch-3	32
25	(a)	Ch-2	14

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
26	(d)	Ch-8	31
27	(c)	Ch-8	45
28	(a)	Ch-6	84
29	(a)	Ch-5	30
30	(a)	Ch-4	65
31	(a)	Ch-5	55
32	(c)	Ch-6	99
33	(c)	Ch-1	55
34	(a)	Ch-4	78
35	(c)	Ch-5	44
36	(b)	Ch-7	46
37	(c)	Ch-7	84
38	(a)	Ch-2	32
39	(a)	Ch-7	94
40	(a)	Ch-3	42
41	(c)	Ch-4	110
42	(a)	Ch-4	111
43	(d)	Ch-4	112
44	(c)	Ch-4	113
45	(a)	Ch-4	114
46	(a)	Ch-1	86
47	(d)	Ch-1	87
48	(c)	Ch-1	88
49	(a)	Ch-1	89
50	(c)	Ch-1	90

* S - Self Test Question